



December 3, 2012

California Energy Commission
Dockets Office, MS-4
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Electronically submitted to: docket@energy.ca.gov

RE: Docket No. 12-IEP-1A (IEPR Draft 2012 Update)

Dear Commission:

Sierra Club California appreciates the opportunity to provide comments on the **Draft 2012 Integrated Energy Policy Report Update**

Introduction

Sierra Club applauds this seminal CEC report and sends its compliments to all the staff and others who contributed to its drafting. It has many innovative, creative and pragmatically helpful suggestions that the Sierra Club supports, including:

1. Renewable Action Plan
 - a. Beginning the discussion on considering current actions in the context of higher RPS targets for 2020 and beyond.
 - b. Creating this master integrated cross-agency plan with annual assessments and course corrections if needed.
 - c. Increased attention on identifying and addressing barriers to more significant Renewable Distributed Generation (RDG) implementation towards achieving the Governor's vision of 12,000 MW of RDG by 2020.
 - d. Focus on DG planning at a more granular, comprehensive, integrated and transparent way.
 - e. Focus on addressing integration including removing policy, regulatory and financial barriers to allowing automated demand response (ADR), storage, energy efficiency (EE) and other resources to compete for more clearly defined integration requirements.
 - f. Addressing some of the underlying foundational infrastructure improvements that need to be in place to support more and better integrated renewables including implementation of a modern and sophisticated Smartgrid using updated DG circuitry, smart inverters with telemetry, better renewables forecasting, better grid modeling tools and more sophisticated control systems.

- g. Implementation of RDG on state properties, schools, military bases, and other institutional sites.
- h. Identifying many of these strategies that also will have the benefit of lowering costs to billpayers including, we believe, avoided large new transmission costs and greater resilience against climate-related weather emergencies.
- i. Recognition of the direct effects that climate change will increasingly have on our electricity system in order to start planning adaptive and mitigation strategies now.
- j. Directing that new generation projects at both the distribution and transmission level should be sited where they will have minimal environmental damage to lands, watersheds and habitats.
- k. Creating a Statewide Data Clearinghouse for Renewable Energy Generation Planning and issuing an OIR to begin this process in 2013.
- l. Initiating the proposal to create a “Funding center and clearinghouse ...to better coordinate and leverage existing clean energy financing programs and increase public awareness of what programs are available.”
- m. Continuing our state’s best practice of valuing the need and benefit of investments in research to accelerate pragmatic and cost effective solutions to our new system requirements.

General Comments

1. **The role of the CEC as lead planner and coordinator – State Governance Model for Energy**
One of the challenges of managing California’s electrical infrastructure is its complex governance model not only within the state but between the state, regional authorities and the Federal government. It is commendable that in recent times, the various agencies have made efforts to better coordinate their activities. It is important to more formally structure the integration of these efforts. One approach would be to have the CEC chair the process among all agencies to come up with an integrated plan with quantified goals and track and measure actual progress against the plan. The CEC could create a timeline of all tasks and use this to guide progress. This is consistent with the CEC’s existing role to provide forecasting frameworks, and qualified renewable energy, and would add coordination and tracking the progress of all state energy policy goals between the different agencies.
2. **Exploit California’s Geothermal Resources**– While California is home to the world’s largest geothermal generation production, there is still significant untapped potential. “An aggregation of various estimates provides a range of 3,186 – 24,750 megawatts (MW) of geothermal energy resources could be developed in California using conventional and incrementally improved technologies.” Geothermal resources provide high capacity, consistent production and at a smaller land use footprint / MW than most other renewable technologies. With extraordinary new drilling technologies developed to generate oil production globally in more challenging situations, this technology could be applied to drilling “hot rock” production facilities. And geothermal energy is ‘baseload’ energy that can play an important role as a part of a balanced portfolio of integrated renewables. Geothermal could also contribute to filling some of the gap created by the retirement of coal and SONGS outages in the longer term.

We recommend that the CEC include a new action item in this report which calls for initiating a series of workshops to define barriers, understand unique challenges, determine costs and

benefits of geothermal and develop a plan of action to better support the actual development of California's geothermal resources. The CEC could play a significant role in supporting policy changes, grant funds and coordinating financing to help initiate these types of projects. The share of state funding and focus currently provided by California toward geothermal is disproportionately small compared to its potential value and compared to other renewable energy resources.

3. **Integration of renewables – short term gas or longer term carbon-free solutions?**

The draft report states, “As California increases its use of renewable electricity generating resources, there are major planning challenges associated with moving from a generating fleet largely composed of dispatchable resources, which can be ramped up or turned off on demand, to one that includes large amounts of intermittent resources that cannot. Integrating these resources will require a combination of complementary resources like energy storage, demand response, smart grid technologies, and flexible natural gas plants to provide the services needed to operate the electric grid safely and reliably. Electricity planners need to incorporate and consider carefully how to develop a role and market for these supporting technologies.”

Our vision is that within 3 – 5 years, it is quite likely that a number of new conditions will be in place to effectively support integration of significantly increased penetration of renewables without having to rely on any new natural gas-fired support. Some of these conditions include:

- Procurement targets to facilitate deployment of high-value storage applications to integrate renewables and allow for increased penetration of distributed generation.
- Tariffs, rules, markets and FERC approvals to support a robust storage market with rapid adoption coincident with new renewables implementation.
- The successful implementation of significantly increased market price driven commercial automatic demand response (ADR)
- IOU enhancement of many distribution circuits and substations to allow deeper penetration of DG.
- Even more accurate solar and wind forecasting
- Implementation of smart inverter standards
- As a critical component of each IOUs Smartgrid deployment plan, the development of new two way communications networks between generation nodes and central control along with a centralized database of demand at a granular level fed by input from Smartmeters.
- Implementation of significantly more sophisticated and automated central and distributed control systems to manage the increasingly modern Smartgrid system along with use of more sophisticated modeling tools.

Achievement of these conditions, especially with respect to utility deployment of a Smartgrid, will not be a cliff function but will be gradual over time and continuing into the future. This deployment should be strategic, focusing first on areas of the grid that have high concentration of distributed generation resources, that are burdened by congestion, and/or that have special economic and security value for higher reliability standards. It is reasonable to assume that sufficient progress will be accomplished within 3-5 years to avoid having to consider making any long term commitments today to new gas-fired generation to integrate increased renewables

With this level of Smartgrid, DR, Storage and integration support, we should be able to start reducing our reliance on gas-fired generation to integrate renewables. In the interim, we may need to use existing flexible gas-fired generation to help this integration and develop forward procurement markets for up to five years not only to support gas-fired generation but also to support other integration technologies such as storage, DR and EE. However, what would not make sense is to lock in long-term contracts for new fossil fuel resources. To do so, would lock in assets that would have a high probability of having to be shut down long before the end of their useful lives, creating stranded assets, wasteful expenses to billpayers for unneeded infrastructure, and the potential to displace renewables. In addition, use of these fossil resources as opposed to low or zero carbon alternatives may put the state out of compliance with ever more restrictive GHG requirements in the future.

We recommend that the electrical regulatory agencies only consider gas-fired generation on a prioritized basis driven by need such as:

1. First, prioritize new integration resources that emit no GHGs, and provide markets to value ramping and flexibility services they can provide
2. Second, use the existing fleet of resources.
3. Third, for needs that cannot be met by either of the above resources, Retrofitting existing plants to provide more flexibility in response to studies clearly identifying how much and where additional need for these types of flexible resources are needed.

We would generally be opposed to new large gas-fired generation plants and would be opposed to retrofits of retiring OTC plants to the extent that they can be replaced with demand-side alternatives and a balanced portfolio of baseload and integrated intermittent renewables that has less need for integration. The good news is that many of these other solutions, such as storage, can be implemented much faster, more predictably, and in a more targeted manner than new gas plants, and will contribute to the long term solution to our GHG problem while meeting the needs of the future electrical grid. We should not be making long-term commitments to gas fired generation in the heat of the current need when we will have a declining need in just a few years as these other solutions become available.

The state has an obligation to limit and avoid the construction of new gas-fired plants that can create excess GHG emissions over their long lifetimes and increase billpayer's costs unnecessarily when viable better alternatives are in place today and will be getting more viable over the next few years. Gas is only a short term strategy that should be phased out over time.

Specific Comments

1. CHAPTER 5: RENEWABLE ACTION PLAN

- a. *Strategy 1: Identify Preferred Geographic Areas for Renewable Development*
 - i. *Recommendation 2 – Identify Renewable Energy Development Zones*

Sierra Club supports and commends the CEC on its approach on how to accomplish this. In addition to the several data sources it cites in helping to develop overlay maps and identify these zones, we recommend that some of the

work performed by Black and Veatch presented at the ReDEC workshop on 12/9/09 entitled “Summary of PV Potential Assessment in RETI and the 33% Implementation Analysis” be utilized and further developed. In the study presented, they used satellite imagery to look at rooftops and calculate solar PV potential. (Using conservative assumptions, the study found that there is potential to develop over 15,000 megawatts of PV solar capacity in California’s urban areas. This could produce over 30,000 gigawatts-hours of electricity annually.) In addition to large rooftop maps, it would also be helpful to create additional overlay maps by type of potential site for renewable energy, by resource type, by ownership model (e.g. Universities, schools, state properties, lands near major water system conveyance pumps, etc.), and for types of installation sites (e.g. for PV such as for parking structures, over aqueducts, lands near substations, etc.). Areas where there is a concentration of, for example, a number of large industrial rooftops could in aggregate be considered a zone unto itself. Generally having these additional overlay maps could help better identify properties and projects with a combination of interested property owners and favorable infrastructure meeting the criteria for “preferred development zones.”

The report also recommends focusing on looking at coordinating land use planning “with an initial focus on identifying preferred renewable zones in the Central Valley”. In addition to the Central Valley it could prove helpful to also focus on Southern California to accelerate the installation of more RE to mitigate the “perfect storm” of challenges sooner. While doing this planning in the Central Valley is a great opportunity, working on it in Southern California is a necessary urgency.

- ii. The report correctly observes “Information about investments in distribution infrastructure is not readily available to the public nor is there public transparency in the distribution planning process of each utility. Because the transmission and distribution systems were designed on the premise that generation would flow from utility-scale generation to the distribution system, integrating increasing amounts of generation at the distribution level requires that both planning processes and system infrastructure be modernized.”

In order to address this concern, we recommend that the CPUC or CEC require the IOUs to post specific distribution grid upgrade plans and completion status on an IOU system status overlay map and through other documentation available to interested stakeholders such as developers.

b. *Strategy 2: Maximizing Value Through Appropriate Assessment of Benefits and Costs*

- i. Sierra Club supports and agrees with the fact that many of the proposed initiatives would help lower costs or militate against cost increases to billpayers. It might be helpful to list or in some other way give greater visibility in aggregate to these. Perhaps calling out cost-mitigation for each initiative where appropriate would be helpful. Examples include streamlined permitting processes, lower permitting fees, more targeted interconnection efforts to preferred development zones,

Smartgrid enhancements leading to self-healing circuits that can reduce the economic impacts of outages, etc.

We recommend, when conducting cost/benefit analysis on renewable energy resources, that in addition to the normal list of value benefits, avoided external costs (externalities) of climate adaption and damage should be considered. While it is true that California's actions alone are not enough, by what it is able to accomplish for its large economy and the example it can set to the US and world in encouraging other jurisdictions to act, it can help mitigate the rate and ultimate extent of climate change and its negative economic effects. Further, the excellent work that California, its political leadership, energy agencies and other stakeholders are doing (such as this effort) is cutting edge and useable by other jurisdictions in developing their renewable energy plans in the future.

ii. ***Recommendation 5 – Modify Procurement Practices to Develop a Higher Value Portfolio.***

1. One of the CEC's recommendations is: "Procurement decisions should consider an expanded suite of renewable energy benefits, including RPS-eligible facilities that can provide integration benefits, reduction in forest fires that threaten public health and safety and damage transmission lines, ..."

Sierra Club supports bioenergy from sustainable feed stocks but opposes biomass generation plants where anticipated feed stock needs during the expected lifetime of the project may require or incentivize unsustainable and/or damaging forestry practices.

2. If the purpose of conducting cost-benefit analysis of renewable resources is primarily concerned with making best choices among various specific and integrated combinations of renewable resources, that may be appropriate. However, if such studies are used to compare the value proposition of various renewables against conventional generation resources especially where "least cost/best fit" criteria are used, then integration and other costs for conventional resources should also be included. For example, billpayers have incurred costs of integration of nuclear facilities via expensive pumped-storage facilities and taxpayers have accepted an unfunded liability for de facto insurance to cover damages in the event of a nuclear disaster.
3. When doing these cost/value studies, a well-balanced portfolio of renewables may have collective integration costs much lower than the sum of integration costs of single components. It would be an overly simplistic and misleading approach to just consider the integration costs of a single type of technology or project without considering the broader context, and this could significantly erroneously overstate the full costs. One way of

addressing this could be to apply a discount assuming a reasonable level of geographic, technology and project size diversity to individual technologies costs.

4. The CEC is in the process of its periodic Comparative Costs of Energy Resources study. This new study could be helpful here if it includes a full and fair comparison of all the costs and benefits associated with each type of energy resource such as including the relative cost to the environment and human health of various conventional resources.
5. The CEC has been proactive in conducting studies to learn best practices from around the world to inform our actions. In that regard, we recommend strongly that the CEC conduct a study to understand why Germany's Levelized costs of energy (LCOE) costs for PV solar are half of California's and what we might be able to do to especially lower balance of system (BOS) costs, most of which can be influenced by well-designed policy. (For more general reference information, please see "The German Energy Transition: Arguments for a Renewable Energy Future" -- key findings, [click here](#) or www.EnergyTransition.de)

c. Strategy 3: Minimize Interconnection and Integration Costs and Requirements

i. Recommendation 12 –Develop a Dialogue on Distribution Planning and Opportunities for a More Integrated Distribution Planning Process

1. We recommend that with the combination of the CECs recommendations to:
 - a. disaggregate its load forecast and represent that data in overlay maps,
 - b. identifying preferred renewable energy zones and
 - c. requesting the IOUs to represent the current status of their distribution networks and future plans,
 that it can become very clear where the optimal areas to develop renewable energy projects will be.

The optimal nexus of demand/load, renewable preference zones and infrastructure can identify the priority project areas. It may also be that if there is an excellent preferred renewable energy zone with insufficient infrastructure, that this then drives the IOU to prioritize this area for distribution grid enhancements. These project zones may also be good candidates for further early commercial demonstration projects for use of storage technologies to provide improved integration. The CEC and CPUC could help support these with helping to arrange grant or other financing.

Once these areas have been identified, cross agency/functional master project plans can be prepared. The IOUs can prioritize and fast track any distribution grid enhancements needed to prepare for this growth,

financial incentives/financing can be offered to encourage property owners working with developers to develop projects in these zones, necessary telemetry, integration and control systems can be developed, etc. The master plan can list each key stakeholder and the tasks each is responsible for in order to complete the project successfully, cost effectively and quickly. The initial projects developed in this way can serve as models for subsequent preferred zone development project programs.

We recommend that a specific action to define how these projects would be created and managed around these preferred project areas be added to the IEPR Update report.

d. Strategy 5: Research and Development and Financing

i. Recommendation 25. Promote R&D for Renewable Integration

Sierra Club recommends that priority be given to fund storage projects as early commercial projects to integrate intermittent renewables. These projects could be prioritized to Southern California to support new renewables which could help it deal with loss of generation from the SONGS outages. It would also be helpful to fund the development of a robust cost-effectiveness model and cost effectiveness studies on storage to demonstrate that many of these technologies are, in fact, cost effective today when compared with other alternatives.

2. CHAPTER 4: ELECTRICITY INFRASTRUCTURE ASSESSMENT

Clearly, the continuing and possibly permanent outage of SONGS has created some urgent and long term challenges for Southern California especially in Orange County and San Diego.

Electrical agencies and IOUs are at a crossroads. There are essentially two alternate paths that could be pursued. One is to rely on the old paradigm of obtaining more gas-fired generation primarily through re-powering OTC plants and delaying retirement of existing old gas fired plants. The other is to pursue the current and future path towards more renewables successfully integrated. The first path will increase GHG and produce stranded assets. The renewables pathway will accelerate progress towards the 2050 goal of an 80% reduction of GHG while making more cost effective generation and infrastructure investment decisions on behalf of billpayers.

As the CEC correctly notes, California has excess generation capacity exceeding reserve requirements without SONGS statewide but the challenge is meeting local capacity requirements.

Sierra Club recommends that, to the maximum extent possible, solutions rely preferentially on renewables as opposed to gas-fired generation and rely on any unavoidable gas-fired generation for the shortest time period possible.

Actions that could be taken to achieve this objective are:

- 1) Explore new transmission facilities to route more power from areas of excess capacity to areas of low local capacity such as in San Diego. Such facilities could also increase

reliability to such areas by having multiple paths of power flow. This action would be feasible if these transmission facilities could utilize existing corridors and could avoid significant time delays, costs, controversy and environmental damage.

- 2) Accelerate the development of DG renewables in areas of low generation relative to load, taking advantage of many of the new program suggested in this report such as identifying preferred renewable energy zones. A key benefit of integrated DG is that it reduces local capacity needs, transmission needs and enhances system reliability at the local level.

IOUs could then prioritize distribution grid and other infrastructure upgrades o these areas to support the additional DG RE.

We support the CEC's recommendation as part of this solution: "When identifying opportunities to deploy renewables on state property, a priority should be deployment in generation-constrained areas in Southern California affected by the outage of the San Onofre Nuclear Generating Station."

- 3) Promote integration strategies
 - a) Accelerate commercial market price driven ADR programs modeling after the success of PJMs program and informed by early success of California IOU programs. (The CPUC could work to expedite its proceeding on ADR.)
 - b) Fund early commercial storage projects to integrate newly installed renewables
 - c) Identify any possible appropriately sited pumped hydro projects that could be used, for example, to support large morning and evening ramps caused by PV Solar.
- 4) Continue to promote other demand-side strategies aggressively such as energy efficiency and CHP.

The CEC should lead the process to develop an alternate timeline-based scenario to the one being suggested. The suggested scenario discussed in this report assumes repowering OTC plants over the next several years and delaying retirement of existing gas fired plants. Sierra Club believes that this scenario is unnecessary and counterproductive to the California's objectives. We recommend developing an alternate plan which would highlight some of the strategies listed above with integrated renewables, delaying retirement of gas plants for just a few years to permit enough time to implement new renewables and not needing to repower OTC plants. Delay of retirement may be preferable in the short term to repowering which will be much longer lived.

As someone once said, "let's not waste a crisis". The State could use the SONGS outage to accelerate the implementation of renewables, storage, efficiency and conservation vs. building more gas-fired plants that takes us backwards and builds in both excess GHG production and stranded assets for many years. Instead, we could invest this considerable effort and funding towards a solution that moves us further along cost- effectively to our long term goals.

Many of our proposed approaches could be implemented much more quickly and predictably than repowering existing OTC plants.

Sierra Club agrees with the problems that must be addressed but does not agree or support the foregone conclusion expressed below on how to solve the problem.

“Targeted Procurement Decision in 2012: Since the OTC assessments and the foundational analyses to be integrated into AB 1318 all show some need for local capacity area resource additions even without the San Onofre issues, it makes sense for the CPUC to proceed with its plans to provide procurement authorization to SCE and SDG&E by the end of 2012.... Failing to do so risks either failing to satisfy reliability standards or inducing SWRCB to delay OTC compliance dates for some Southern California OTC facilities.”

We recommend instead that this report add an action item that requests at least these two scenarios be fully developed and evaluated before a decision is made on the best way to proceed.

3. CHAPTER 3: COMBINED HEAT AND POWER ASSESSMENT AND BARRIERS

The CEC has made good progress in developing a better understanding of the large potential of CHP but also the barriers to its further development through its February 2012 Workshop, ICF International consultant’s report and subsequent staff white paper. Progress has recently been made to remove a few barriers and some processes are underway to address some others. However, substantial barriers remain and there are no apparent action items being taken or planned to address these. These barriers are listed in the IEPR Update report and include dealing with the substantial aggregate financial penalties applied to CHP projects due in part to interconnection costs and time delays, Non-bypassable and Departing Load Charges, Standby and Demand Charges, Metering Requirements and Net Energy Metering (NEM) rule limitations to CHP.

We recommend that the CEC add an action item to this report which requests the CPUC open a proceeding ideally to address all of these issues together as they relate to the unique characteristics of CHP. The objective would be to develop new rules that would be fair to IOUs and other billpayers, while in aggregate not posing such a large and unfair financial burden on CHP projects as to effectively limit their growth and the benefits they can offer to billpayers, electrical system users and citizens alike.

Thank you for your consideration.

Sincerely,



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